

IDAHO DEPARTMENT OF FISH & GAME

Jerry M. Conley, Director

Pahsimeroi Hatchery

Annual Report



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by

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Pahsimeroi Hatchery

ABSTRACT

Some 1,097,060 7 to 10 inch steelhead smolts were received from Niagara Springs Hatchery and released at the trap facility.

We took 3,251,702 steelhead eggs, with a pick-off of 662,560 infertile eggs. This left 2,589,142 eggs to be shipped to Niagara Springs Hatchery (1,697,010) and Hagerman National Hatchery (892,132). The eye-up was 79.6%.

Some 46 summer chinook were trapped during September, measured and released above the trap to spawn naturally.

An expansion program is underway to raise a million chinook smolts a year at the facility and trap returning adults for egg taking purposes.

This facility is owned and financed by Idaho Power Company. It is part of the mitigation obligation to relocate steelhead and chinook salmon runs from the Snake River to the Salmon River drainage. The original runs were blocked by the Hells Canyon complex of dams.

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OBJECTIVES

The objectives of the Pahsimeroi Hatchery are to:

1. Provide a release point for about 1.1 million 7 to 10 inch steelhead smolts from Niagara Springs Hatchery.
2. Collect 3.5 million eggs from these returning adults two years later at a trap facility operated here.
3. Incubate steelhead eggs for two weeks, and ship eggs to Niagara Springs Hatchery to be reared for 12 months.
4. Collect summer chinook salmon eggs from trap during summer months.
5. Hatch summer chinook eggs and rear to smolt size (4 to 5 inches).
6. Release summer chinook salmon smolts in spring of year and collect adults later when they return from ocean.

INTRODUCTION

Pahsimeroi Hatchery is located near Ellis, Idaho on the Pahsimeroi River. It receives its water supply directly from the Pahsimeroi River and from a series of springs nearby. The incubators are supplied with 52 degree spring water pumped into a 10,000 gallon water tank that acts as a storage reservoir.

The fish trap is supplied with water from the Pahsimeroi River. Two dirt rearing Ponds (30 x 600 feet) are located six miles above the trap and will be used for rearing the chinook salmon smolts.

The fish trap consists of three concrete ponds measuring 15 feet x 75 feet x 3.5 feet deep. The fish are held in these ponds until they are sexually mature and the eggs can be taken. The trap has a series of ladder steps into the structure and a specially built metal weir keeps the fish from leaving the holding pen.

A weir structure 55 feet long is placed across the Pahsimeroi River to direct the arriving fish into the trap facility.

The facility consists of a residence for the hatchery superintendent, a pump-house to house water pump, 10,000 gallon water storage tank, two 10 x 50 mobile homes for storage and temporary help, a metal shop building and a cinderblock building for office, public restroom and incubator room for twenty 16-tray Heath incubation cabinets.

The pond area consists of a residence that is used for temporary help, a walk-in freezer unit to store moist fish food, and a small metal storage building.

STEELHEAD SMOLT TRANSFERS FROM NIAGARA SPRINGS

Some 52 transport loads of steelhead smolts were planted at the weir site in the spring of 1980. The first load arrived on 17 March and the last load on 2 May.

One of the marked smolts was captured in the Gulf of Alaska in early August from this release group.

Date	Pounds	Size/pound	Number	IPC Truck	Fish and Game Truck
3/17	5,000	4.0	20,000	X	
3/18	5,000	4.0	20,000	X	
3/19	5,000	4.0	20,000	X	
3/20	5,000	4.1	20,500	X	
3/21	5,000	4.1	20,500	X	
3/22	5,000	4.3	21,500	X	
3/23	5,000	4.3	21,500	X	
3/24	6,400	4.8	30,720		X
3/24	5,800	4.8	27,840		X
3/24	2,700	4.8	12,960		X
3/24	5,000	4.8	24,000	X	
3/25	6,500	4.8	31,200		X
3/25	6,600	4.8	31,680		X
3/25	5,000	4.8	24,000	X	
3/25	2,700	4.8	12,960		X
3/26	5,000	4.8	24,000	X	
3/26	7,000	4.8	33,600		X
3/27	5,800	4.8	27,840		X
3/27	2,900	4.8	13,920		X
3/27	6,300	4.8	30,240		X
3/28	5,800	4.8	27,840		X
3/31	6,300	4.1	25,830		X
3/31	5,000	4.1	20,500	X	
3/31	6,300	4.1	25,830		X
3/31	2,700	4.1	11,070		X
4/1	6,300	4.1	25,830		X
4/1	5,000	4.1	20,500	X	
4/1	2,700	4.1	11,070		X
4/1	6,300	4.1	25,830		X
4/2	5,000	4.1	20,500	X	
4/3	5,000	4.1	20,500	X	
4/4	5,000	4.1	19,000	X	
4/5	5,000	4.0	20,000	X	
4/6	5,000	3.8	19,000	X	
4/7	5,000	4.0	20,000	X	
4/8	5,000	3.8	19,000	X	
4/9	5,000	4.0	20,000	X	
4/14	5,000	3.8	19,000	X	
4/15	5,000	4.0	20,000	X	
4/16	5,000	3.8	19,000	X	
4/17	5,000	4.0	20,000	X	
4/18	5,000	3.7	18,500	X	
4/19	5,000	3.7	18,500	X	

Date	Pounds	Size/pound	Number	IPC Truck	Fish and Game Truck
4/20	5,000	3.7	18,500	X	
4/21	5,000	3.7	18,500	X	
4/22	5,000	4.0	20,000	X	
4/23	5,000	4.0	20,000	X	
4/28	5,000	4.0	20,000	X	
4/29	5,000	4.0	20,000	X	
4/30	5,000	4.0	20,000	X	
5/1	5,000	4.0	20,000	X	
5/2	<u>1,200</u>	4.0	<u>4,800</u>	<u>X</u>	
Total	260,300		1,097,060	35	17

FISH RELEASES

Some 35 steelhead males and 1 steelhead female were released above the trap weir. These fish arrived late in the season, after the egg take was finished.

We obtained 72,000 spring chinook eggs from Cowlitz Hatchery in Washington in mid-October. They were hatched and planted as swim-up fry in the Salmon River below Ellis, Idaho in December 1980. This was an experimental release to see how chinook salmon fry would do at this hatchery when held in incubators until they are fully developed and ready to swim. The fry survived well with no problems, and it was determined that salmon could be reared at this hatchery.

We released 46 summer chinook salmon above the weir to spawn naturally after measuring and counting them.

FISH TAGGING

Each year, a portion of the released steelhead smolts are marked with a small coded wire tag, inserted into the nose area of the fish. The adipose fin is clipped off at the same time so that researchers can identify by external mark, which fish have been tagged. The coded wire tag can be placed under a low power microscope and read to determine where the fish was reared, and when released. The 1980 smolt release had a total of 103,275 tagged smolts.

The fish returning in 1980 yielded 119 adults with coded wire tags. We released 117,000 tagged fish in 1978, approximately 1% of which returned to the hatchery.

SUMMER CHINOOK SALMON TRAPPING PROGRAM

The weir was installed on 1 August to trap the summer chinook salmon returning to spawn. The first salmon arrived on 3 September and the last one arrived on 28 September. The run total was 46, of which 13 were jack salmon (1 year ocean males), 29 were males and 4 were females. The run peaked on 13 September with 8 fish coming into the trap.

Seven fish in the run were marked with an adipose fin clip, 6 of the fish were from the 1978 smolt release and one was from the 1977 smolt release.

13 fish were 1 ocean fish
 32 fish were 2 ocean fish
 1 fish was 3 ocean fish

Length	Males	Females
less than 22	13	0
22	1	0
23	1	0
24	2	0
25	1	0
26	2	0
27	2	0
28	4	2
29	5	1
30	3	1
31	2	0
32	1	0
33	1	0
34	3	0
45	1	0
Total	42	4

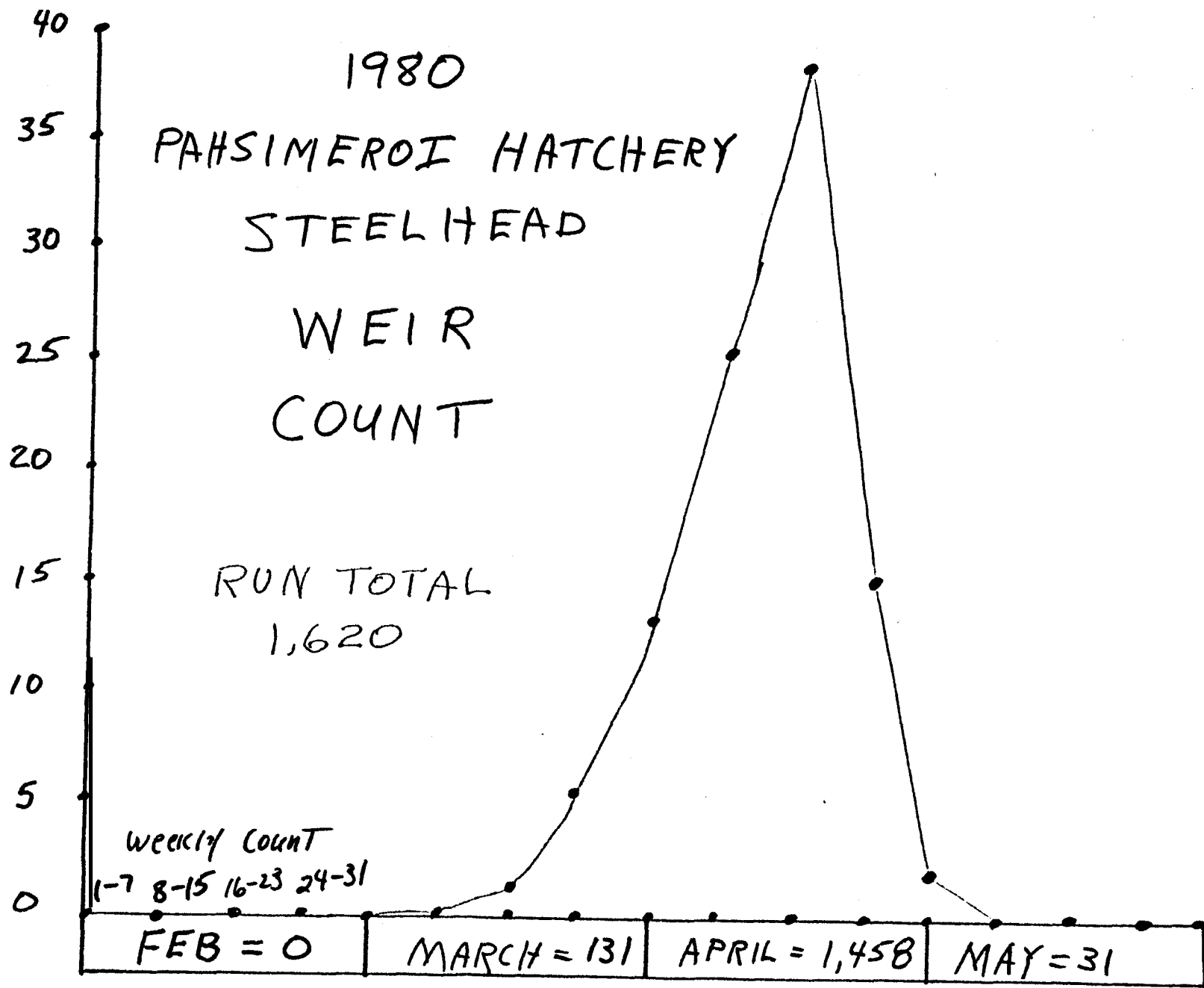
STEELHEAD SPAWNTAKING OPERATIONS

The first steelhead arrived at the trap on 7 March and the last one came into the trap on 13 May. The run total was 1,620 fish with 902 females and 718 males. The first eggs were taken on 8 April and the last eggs were taken on 9 May. We spawned 897 females and 463 males, with a prespawning mortality of 22 fish in the holding ponds.

Some 3,251,702 eggs were taken, and the pick-off was 662,560 infertile eggs. This left 2,589,142 eyed eggs to be shipped. Niagara Springs Hatchery received 1,697,010 eggs and the Hagerman National Hatchery recieved 892,132 eggs. The eye-up success was 79.6% fertile eggs. The average number of eggs per female was 3,625 eggs.

Date	Egg	Take	Per ounce	Number	Females	Males
4/8	575	ounces	238	136,850	34	18
4/15	1,822		238	433,636	106	55
4/18	2,035		238	484,330	130	70
4/22	3,966		238	943,908	265	130
4/25	2,650		250	662,500	182	95
4/29	1,380		238	328,440	99	50
5/2	750		238	178,500	55	30
5/6	245		238	58,310	18	10
5/9	106		238	25,228	8	5
	13,529			3,251,702	897	463

PERCENT OF RUN



RESEARCH PROJECTS

Three groups of eggs were water hardened in a 1:300 solution of Wescodyne and water (4.25 ounces of Wescodyne in 10 gallons of water). Wescodyne is a germicidal solution containing iodine and other properties capable of killing bacteria and virus. During water hardening, the solution is drawn into the egg.

Egg take date	Number taken	Number eyed eggs shipped	Eye-up %	Total time in solution
4/15/80	433,636	341,530	78.8	10 minutes
4/18/80	484,330	364,378	75.2	10 minutes
4/22/80	943,908	678,776	71.9	30 minutes

The groups of smolts from these egg takes are being monitored to see if there are any changes or differences in disease frequency from the regular eggs that were not treated with the chemical.

The University of Idaho conducted a cold water acclimation study using the upper ponds and different marked groups of juvenile steelhead. The ponds were monitored until 1 May.

CARCASS DISPOSITION

Some 1,562 steelhead carcasses were given to the public after they were spawned. The people came to the hatchery on the days of spawning and stood in line to get a fish. Most spawning was accomplished on Tuesdays and Fridays of each week.

Research has shown that the steelhead do not die immediately after spawning as do salmon, but very few of them survive the trip back to the ocean. Cutting open the body cavity to remove the eggs is a much more efficient method of obtaining the eggs and smaller egg losses result. The fish were utilized by the public and provided about 11,000 pounds of fish to them.

No salmon were spawned this year and no carcasses were given away.

FUTURE DEVELOPMENT

Idaho Power Company is planning to expand the hatchery in the summer of 1981. Future expansion calls for construction of 4 raceways 100 feet long. Each will be 4 feet wide and the flow will be about 225 gallons of water per minute per raceway. River water will be the source of supply during most of the year. In December, when the chinook salmon are taken from the incubators, spring water from a nearby spring will be mixed into the raceway water to warm it to about 45 degrees. This will enable the salmon fry to make the transition from the 52 degree incubator water. Salmon fry have difficulty starting to feed properly if the water is below 40 degrees. By warming the water with springs, it will be much easier to start the fry on feed.

After they have started feeding, the spring water will be cut back until the fry are in natural river temperature water. In June, the fry will be transferred to the two large rearing ponds located some six miles upstream. The salmon will be kept there until the following April, when they will smolt and migrate to the ocean. The ponds will have a new inlet structure built, and will incorporate a better water diversion structure for obtaining water from the river. Settling ponds will be constructed on each pond to remove waste products from the river return water.

The river water temperature ranges from 34 degrees in the winter to 62 degrees at times in the summer.

The following temperatures are averages for the 1978 year.

January	38.0 degrees
February	39.9
March	43.9
April	47.0
May	49.4
June	55.4
July	57.8
August	55.1
September	53.1
October	48.8
November	40.9
December	35.4

Mean average temperature for the 12-month period equals 47 degrees F.

To smolt properly, the salmon should be in the size range of 15 to 25 fish per pound no later than 1 April. Length would be nearly five inches.

ACKNOWLEDGMENTS

Hatchery staffing during the fish year included:

Bob Moore	Fish Hatchery Superintendent I
Tom Levendofsky	Fish Hatchery Superintendent I
John Reid Diane	YACC
Reid	YACC

Help was received from other department personnel and other agencies during the steelhead spawning period.